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## **ATTACHMENT 1**

### **PROPOSED COOL CARS REGULATION APPROVED BY THE BOARD AT THE JUNE 25, 2009 BOARD HEARING WITH PROPOSED MODIFIED TEXT**

Shown on the following pages are proposed modifications to the original proposed regulation set forth in Appendix A to the Staff Report: Initial Statement of Reasons, which was released May 8, 2009. Text proposed for adoption during the 45-day notice period is shown without underline as permitted in title 1, California Code of Regulations, section 8. Text proposed for amendment is shown in underline for additions, and ~~strikeout~~ for deletions. The final adopted text will appear as new text without underline strikeout.

Date of Release: **December 10, 2009**

## **Subarticle 9. Cool Car Standards and Test Procedures – 2012 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.**

**§ 95600. Purpose.** The purpose of this article is to reduce greenhouse gas emissions from 2012 and subsequent model-year passenger cars, light-duty trucks, and medium-duty vehicles less than or equal to 10,000 pounds GVW.

NOTE: Authority cited: Sections 38501, 38510, 38560, 38562, 38580, 39600, and 39601, Health and Safety Code. Reference: Sections 38501, 38505, 38510, 38550, 38551, 38560, 38562, 39003, 39500, 39600, and 39601, Health and Safety Code.

### **§ 95601. Applicability.**

(a) This article applies to:

- (1) ~~(a)~~ manufacturers and secondary manufacturers of new 2012 and subsequent model-year passenger cars, light-duty trucks, and medium-duty vehicles less than or equal to 10,000 pounds GVW.
- (2) ~~(b)~~ manufacturers of vehicle glazing.
- (3) ~~(c)~~ collision repair facilities.
- (4) ~~(d)~~ persons that provide vehicle window replacement services.

(b) This article does not apply to:

- (1) Neighborhood Electric Vehicles as defined in title 13, California Code of Regulations, Section 1962(h).
- (2) Emergency vehicles as defined in California Vehicle Code, Section 27156.3, including those vehicles in subdivision (f).

NOTE: Authority cited: Sections 38501, 38510, 38560, 38562, 38580, 39600, and 39601, Health and Safety Code. Reference: Sections 38501, 38505, 38510, 38550, 38551, 38560, 38562, 39003, 39500, 39600, and 39601, Health and Safety Code, and Section 27156.3, Vehicle Code.

### **§ 95602. Definitions.**

- (a) In addition to the definitions found in title 13, California Code of Regulations, Section 1900, which are incorporated by reference herein, the following definitions also apply to this subarticle:
- (1) "Backlite" means all windows, fixed or not, on the rear window of a vehicle, whether composed of glass or some other transparent or translucent material.
  - (2) "Collision repair facility" means any business involved in the repair or restoration of damaged vehicles, including replacement of glazing. ~~transparent or translucent components.~~
  - (3) "Deletion windows" are areas on a vehicle's glazing specifically designed to facilitate transmission of ~~electromagnetic~~ signals into and out of the vehicle.
  - (4) "Direct solar reflectance" or "Rds" means the ratio of reflected solar flux to the incident solar flux, i.e., the ratio of the solar energy that is reflected outward by ~~a paint or~~ the vehicle's glazing system to the amount of solar energy impacting the ~~paint or~~ vehicle's glazing system, usually expressed as a percent. Rds includes ultraviolet, visible, and infrared reflectance.
  - (5) A "flexible" window means a window that passes Test 22 of ANSI/SAE Standard Z26.1-1996.
  - (6) ~~(5)~~ "Glazing" means all transparent or translucent portions of the vehicle body ~~designed to allow occupants to see outside of the vehicle or others to see in~~, whether made of glass or some other material, through which one can see into or out of the vehicle cabin. Opaque areas, other than those rendered opaque by being covered by a device, are not considered to be glazing. Readily removable, flexible windows that roll or fold away are not considered to be glazing. The VIN window, designed to allow reading the vehicle identification number from outside the vehicle, is not considered to be glazing if it is located within the black band area.
  - (7) ~~(6)~~ "Infrared Reflectance" means the ratio of infrared solar energy which is reflected outward by the glazing system to the amount of infrared solar energy impacting the glazing system, usually expressed as a percent. The infrared wavelengths are considered to be those falling between 780-2500 nanometers.
  - (8) "Opaque" means having a visible light transmittance of less than 1 percent.

- (9) "Parked" means the standing of a vehicle, whether occupied or not, otherwise than temporarily for the purpose of and while actually engaged in loading or unloading merchandise or passengers.
- (10) ~~(7)~~ "Privacy Glass" is glazing, whether composed of glass or any other transparent or translucent material, that is rear of the A-B-pillar of in a vehicle, that has less than 70 percent visible light transmittance.
- ~~(8) "Referenced to a glazing of 4 mm thickness" means that the glass composition will meet the required standard when it is produced in a 4 millimeter thickness. Glazing greater than or less than this thickness may have a different Tts value than that of the 4 millimeter thick glazing.~~
- (11) "Readily removable" means windows that can be quickly and easily removed from the motor vehicle without tools.
- (12) ~~(9)~~ "Rooflite" means all windows, transparent or translucent materials, fixed or not, on the top surface, or roof, of a vehicle, whether composed of glass or some other transparent or translucent material.
- (13) "Secondary manufacturers" are manufacturers who acquire new motor vehicles from manufacturers and modify the chassis for other purposes (e.g., small recreational vehicles), to be sold as new vehicles to the ultimate purchaser. These modifications may include the use of additional or replacement glazing.
- (14) ~~(10)~~ "Sidelites" means all windows, fixed or not, on the sides of the vehicle, whether composed of glass or any other transparent or translucent material.
- (15) ~~(11)~~ "Solar absorptance" means the amount of solar energy that is absorbed by the glazing system, expressed as percent.
- (16) ~~(12)~~ "Solar spectrum" means the full solar wavelength range of 300 to 2500 nanometers.
- (17) ~~(13)~~ "Total Solar Transmittance" or "Tts" means the ratio of the transmitted solar flux to the incident solar flux, i.e., the ratio of the amount of solar energy that passes through the glazing system (including energy absorbed and subsequently re-radiated to the interior) to the amount of solar energy falling on the glazing system, usually expressed as a percent.

~~(14) "Vision glass" is glazing that meets a minimum 70 percent visible light transmittance.~~

(18) ~~(15)~~ "Windows" means all glazing, including the windshield, sidelites, backlite(s), and any roof component that transmits light.

(19) "Windshield" means all windows, fixed or not, on the front of the vehicle, whether composed of glass or any other transparent or translucent material.

NOTE: Authority cited: Sections 38501, 38510, 38560, 38562, 38580, 39600, and 39601, Health and Safety Code. Reference: Sections 38501, 38505, 38510, 38550, 38551, 38560, 38562, 39003, 39500, 39600, and 39601, Health and Safety Code.

### **§ 95603. Automotive Glazing Standards.**

(a) Except as allowed in paragraph (ed), the following glazing areas for new passenger cars, light-duty trucks, and medium duty vehicles less than or equal to 10,000 pounds GVW must not exceed the specified transmission of total solar energy (Tts) into the vehicle when the vehicle is parked:

(1) For 2012 model year vehicles, at least ~~twentyseven~~twenty-five percent (25%) of each manufacturer's ~~total projected California~~ vehicle sales volume must use a windshield with a Tts less than or equal to fifty percent (50%).

(2) For 2013 model year vehicles, at least fifty percent (50%) of each manufacturer's projected California vehicle sales volume must use a the windshield ~~must have~~ with a Tts less than or equal to fifty percent (50%).

(3) For 2014 and 2015 model year vehicles, all windshields must have a Tts less than or equal to fifty percent (50%).

~~(3) For 2014 and subsequent model year vehicles, the windshield must have a Tts less than or equal to forty percent (40%).~~

(4) For 2012 through 2015 ~~and subsequent~~ model year vehicles, the rooflite(s), if any, must have a Tts less than or equal to thirty percent (30%), ~~referenced to a glazing of 4 millimeter thickness.~~ Rooflite glazing thinner than four millimeters (4 mm) is compliant if the measured Tts is less than or equal to the Tts calculated by the following formula:  
 $Tts (max) = -7.0\% \cdot d + 58\%$ , where d is the actual thickness of the glazing in millimeters.

- (5) For 2012 through 2015 ~~and subsequent~~ model year vehicles, sidelites and backlite(s) meeting 70 percent visible light transmittance requirements must have a Tts less than or equal to sixty percent (60%), referenced to a glazing of 4 millimeter thickness. Sidelite and backlite glazing thinner than four millimeters (4 mm) is compliant if the measured Tts is less than or equal to the Tts calculated by the following formula:  $Tts (max) = -4.9\% \cdot d + 80\%$ , where d is the actual thickness of the glazing in millimeters.
- (6) For 2012 through 2015 ~~and subsequent~~ model year vehicles, sidelites and backlite(s) not achieving meeting 70 percent visible light transmittance requirements (privacy glass) must have a Tts less than or equal to forty percent (40%), referenced to a glazing of 4 millimeter thickness. Glazing thinner than four millimeters (4 mm) is compliant if the measured Tts is less than or equal to the Tts calculated by the following formula:  $Tts (max) = -6.5\% \cdot d + 66\%$ , where d is the actual thickness of the glazing in millimeters.
- (7) For 2016 and subsequent model year vehicles, windshield(s), sidelites, and backlite(s) must have a Tts less than or equal to forty percent (40%), and roofrites must have a Tts less than or equal to thirty percent (30%).
- (8) For 2016 and subsequent model year vehicles, manufacturers may choose to demonstrate equivalent solar control using the specified alternative test procedure approved in advance by the Executive Officer in lieu of the glazing requirements specified in section 95603(a)(7).
- (b) Total solar transmittance shall be measured using International Standards Organization Standard 13837 Road Vehicles – Safety Glazing Materials – Method for the Determination of Solar Transmittance at 4 m/s, Convention A, dated April 15, 2008, which is incorporated by reference herein, or using an alternate test methodology that results in equivalent solar control, approved in advance by the Executive Officer.
- (c) Labeling. Each piece of original and replacement glazing shall be clearly identified as to its solar performance.
- (1) Solar performance shall be added as follows to the existing logo area for automotive glass: To the area where the DOT code, model number, and ANSI code is located, in a font of similar size and nature, approximately 1.92 mm high, shall be added "CXX" where "XX" is replaced with the performance level of the glazing, e.g., "C58" for glazing with a Tts less than or equal to 58 percent (58%). This information shall be permanently etched or printed into the glass.

(2) An additional label, printed or post-applied vinyl, approximately 30 mm x 50 mm shall be added adjacent to the existing logo area on windows forward of the B-pillar. The label shall include a symbol representing heat rejection, and read "This glass is designed to reduce interior temperatures compared to standard glass and meets all ARB regulations" in 12 point Arial font, in a color clearly readable against the background glazing. The label shall be fully visible when the glazing is installed. For moveable glass, it shall be visible in the fully closed position. This label is not required on windows smaller than one square foot in area. [Reserved]

(d) Exemptions. The following are excluded from the standards in paragraph (a) for solar control glazing.

- (1) Glazing that is internal to the conditioned space, having both surfaces exposed to the controlled environment (e.g., taxi cab dividers).
- (2) Glazing for spaces in the vehicle that are not normally designed to be occupied or environmentally conditioned while the vehicle is in motion (e.g., pick-up bed covers, camper shells).
- (3) Deletion windows as necessary for the purpose of allowing increased ~~electromagnetic~~ signal penetration. These deletion windows may be formed by partial or total removal of applied solar reflective coating or by non-application of such material in the specified area. The area of the deletion window shall not exceed thirty percent (30%) of the total window glazing area, and the total solar control material removed or not applied in the glazing area shall not exceed ten percent (10%) of the ~~total material applied to the glazing-entire window~~. Shade bands that achieve the required Tts level without the use of materials that attenuate signals are not included in the glazing area calculations nor in the calculations of material removed or not applied. These limits apply separately to each individual piece of glazing utilizing deletion windows.

(e) Manufacturer Requirements.

- (1) For 2012 and subsequent model-year vehicles, manufacturers must provide information in the vehicle owner's manual that notifies the consumer that in the event any glazing must be replaced, failure to use glazing that complies with paragraph (a) may impair the ability of the air conditioner to properly cool the vehicle. A table must be included in the vehicle owner's manual that indicates the total solar transmittance for each individual piece of glazing used in that model vehicle. Running changes to the glazing can be accommodated via an

addendum to be inserted into the owner's manual, and an update to the electronic owner's manual.

(2) For 2012 and subsequent model-year vehicles that comply with the requirements through a systems approach such as the use of automated devices that employ when the vehicle is parked to block solar energy, which may or may not be blocked during vehicle operation (e.g., automatic shading devices, electrochromic windows), the manufacturer must list what system(s) is being utilized to achieve compliance with the regulation. The manufacturer must ensure that the performance of the system(s) is durable and tamper-proof for the assumed life of the air conditioner (i.e., 12 years). Depending on the system, it may be subject to monitoring requirements specified in Title 13 CCR section 1968.2 (i.e., OBD II).

(3)-(2) For 2012 and subsequent model-year vehicles, manufacturers must include in the owner's manual the location of any and all deletion windows, pictorially and with measurements, to aid in the positioning of aftermarket devices. Running changes to the deletion areas can be accommodated via an addendum to be inserted into the owner's manual, and an update to the electronic owner's manual.

(4) For 2016 and subsequent model-year vehicles that comply with the requirements via the performance option allowed under paragraph (a)(8), the manufacturer must list in the vehicle owner's manual which technologies (e.g., active ventilation, solar reflective paint or upholstery) are being utilized to reduce solar load in lieu of the glazing otherwise specified in paragraph (a). The manufacturer must ensure that the performance of the system(s) is durable and tamper-proof for the assumed life of the air conditioner (i.e., 12 years). Depending on the system, it may be subject to monitoring requirements specified in Title 13 CCR section 1968.2 (i.e., OBD II).

(5) (3) As a condition to receive an Executive Order for 2012 and subsequent model-year vehicles, manufacturers must submit to the Executive Officer with each initial certification application the direct solar reflectance, solar absorptance, and total solar transmittance, and the glazing manufacturer's compliance certification described in paragraph (h)(1) below of the glazing proposed, and submit for review and approval facsimiles of the information in paragraphs (1) and (2), (2), (3), and (4). Manufacturers shall also submit for review and approval a facsimile of the icon(s) logo and label included on the window glazing. For those vehicles utilizing systems approaches under paragraphs (2) or (4), manufacturers shall also submit a list of



the approach(es) used and data demonstrating the expected durability and warranty of each technology.

(6) ~~(4)~~ Records Retention.

(A) Beginning with the 2012 model-year, manufacturers must maintain records of the direct solar reflectance, solar absorptance, and total solar transmittance of the glazing utilized for each model vehicle for ten (10) years after the end of that model-year.

(B) Beginning with the 2012 model-year, for those vehicles utilizing systems approaches under paragraphs (e)(2) or (e)(4), manufacturers must maintain records of what technology(ies) was utilized, if any, and data demonstrating the expected durability of the alternate approach.

(C) ~~(B)~~ The records in (A) and (B) must be provided within 30 days of request by the California Air Resources Board.

(D) ~~(C)~~ The records must include the following information: model-year, engine test group, model name, direct solar reflectance, solar absorptance, and total solar transmittance for each type (e.g., absorbing, reflecting, privacy) and position (e.g., windshield, sidelite, rooflite(s), backlite) of glazing used. The records must also include necessary and appropriate details for alternate approach(es) utilized.

(f) Secondary Manufacturer Requirements

(1) For 2012 and subsequent model-year vehicles, secondary manufacturers must provide an informational addendum to the vehicle owner's manual that includes a table indicating the total solar transmittance for each additional or alternate piece of glazing used in that model vehicle.

(2) For 2012 and subsequent model-year vehicles, secondary manufacturers must include in the informational addendum to the vehicle owner's manual the location of all deletion windows, pictorially and with measurements, to aid in the positioning of aftermarket devices.

(3) Secondary manufacturers shall retain records showing that additional or replacement glazing for 2012 and subsequent model-year vehicles meets the requirements in paragraph (a).

(4) Records Retention.

(A) Beginning with the 2012 model-year, secondary manufacturers must maintain records of the direct solar reflectance, solar absorptance, and total solar transmittance of the additional or replacement glazing utilized for each model vehicle for ten (10) years after the end of that model-year.

(B) The records in (A) must be provided within 30 days of request by the California Air Resources Board.

(C) The records must include the following information: model-year, model name, direct solar reflectance, solar absorptance, and total solar transmittance for each type and position (e.g., windshield, sidelite, roofite, backlite) of glazing used.

(g) (f) Repair and Window Replacement Facility Requirements.

(1) Collision repair facilities and other persons that provide vehicle window replacement services in California must use replacement glazing that is certified to meet the requirements of paragraph (a), and as described in the table(s) included in the vehicle owner's manual and informational addendum, if any, for 2012 and subsequent model-year vehicles that indicates the total solar transmittance for each individual piece of glazing.

(2) The replacement glazing shall include the logo and label ~~[reserved]~~ as required under paragraph (c).

(3) Facilities providing repair or replacement of alternate technologies to achieve solar load reduction, including systems approaches such as automated shades for the near term and the performance option beginning with the 2016 model year, must ensure that the repaired or replaced systems operate in a similar manner to and result in at least the same level of solar control as that to which the vehicle was originally certified under the requirements of paragraph (a).

(4) (3) Records Retention.

(A) Collision repair facilities and other persons that provide vehicle window or solar management technologies replacement services shall retain records showing that replacement glazing for 2012 and subsequent model-year vehicles meets the requirements in paragraph (a).

(B) These records must be retained for a period of not less than five (5) years.

(C) Such records must be provided within 30 days of request by the California Air Resources Board.

~~(g)~~ (h) Glazing Manufacturer Requirements.

(1) Glazing manufacturers must provide a compliance statement to the vehicle manufacturer confirming ~~certify~~ that the glazing provided for 2012 and subsequent model-year vehicles meets the solar performance represented to purchasers, using the test procedure indicated in paragraph (b).

(2) The glazing shall include ~~appropriate~~ the logo and ~~label(s)~~ indicating solar performance as required in paragraph (c).

(3) Records Retention

(A) Glazing manufacturers shall retain records showing that glazing provided for 2012 and subsequent model-year vehicles meets the requirements in paragraph (a).

(B) These records must be retained for a period of not less than five (5) years.

(C) Such records must be provided within 30 days of request by the California Air Resources Board.

NOTE: Authority cited: Sections 38501, 38510, 38560, 38562, 38580, 39600, and 39601, Health and Safety Code. Reference: Sections 38501, 38505, 38510, 38550, 38551, 38560, 38562, 39003, 39500, 39600, and 39601, Health and Safety Code.

**§ 95604. Manufacturer Compliance Options.** The vehicle manufacturer may choose to pursue alternate compliance options. Manufacturers doing so must notify the Executive Officer of the alternative being utilized for the specified vehicle model in the initial certification application. Improved performance of glazing in one position may offset lesser performance in another. ~~When pursuing these options, glazing performance (Tts) shall be individually averaged on an area basis for the windshield, backlite(s), sidelites forward of the B-pillar, sidelites rear of the B-pillar, and roof lite(s), if any. Where appropriate, and with approval in advance by the Executive Officer, these options may be combined.~~

(a) Improved solar management for the windshield. For each two (2) percentage points that the Tts of the windshield for a specified model is reduced beyond the requirement, one of the following options may be elected:

- (1) The maximum Tts for the sidelites and backlite(s) ~~for vision glass is increased by two (2) three~~ percentage points; or
  - ~~(2) The maximum Tts for the sidelites and backlite(s) not meeting 70 percent visible light is increased by three percentage points; or~~
  - ~~(3)~~ (2) The maximum Tts for the rooflite(s) is increased by two (2) percentage points.
- (b) Improved solar performance for the backlite(s) or sidelites.
- (1) For 2012 through 2015 model year passenger cars only, if the Tts of the backlite is reduced ~~from sixty percent (60%)~~ to fifty percent (50%), the Tts for the windshield may be increased by up to four (4) percentage points; or
  - (2) ~~For 2012 through 2015 model year passenger vehicles, if~~ If the area-weighted average Tts of the sidelites forward of the B-pillar is reduced ~~from 60% to fifty percent (50%)~~, the Tts for the windshield may be increased by up to two (2) percentage points.
  - ~~(3) If the Tts of the sidelites and backlite(s) of passenger cars averages no more than fifty percent (50%), then the Tts for the windshield may be less than or equal to fifty percent (50%).~~
- (c) Solar management approaches without deletion windows.
- (1) For 2012 through 2015 model-year passenger vehicles, if the windshield uses a solar management approach that does not require deletion windows, then the Tts of the windshield may be increased to no more than fifty-one percent (51%).

NOTE: Authority cited: Sections 38501, 38510, 38560, 38562, 38580, 39600, and 39601, Health and Safety Code. Reference: Sections 38501, 38505, 38510, 38550, 38551, 38560, 38562, 39003, 39500, 39600, and 39601, Health and Safety Code.

## **§95605. Enforcement and Penalties.**

- (a) *Penalties.* Penalties may be assessed for any violation of this subarticle pursuant to Health and Safety Code section 38580. Each day during any portion of which a violation occurs is a separate offense.
- (b) *Injunctions.* Any violation of this subarticle may be enjoined pursuant to Health and Safety Code section 41513.

- (c) *Revocation.* The Executive Officer may revoke any Executive Order issued pursuant to this subarticle for a violation of this subarticle.
- (d) Each day or portion thereof that any record required by this subarticle remains unsubmitted, is submitted late, or contains incomplete or inaccurate information, shall constitute a single, separate violation of this subarticle.

NOTE: Authority cited: Sections 38501, 38510, 38560, 38562, 38580, 39600, and 39601, Health and Safety Code. Reference: Sections 38501, 38505, 38510, 38550, 38551, 38560, 38562, 39003, 39500, 39600, and 39601, Health and Safety Code.